EXHIBIT 3

Base Realignment and Closure
Program Management Office West
San Diego, California

FINAL
Parcel C Removal Site Evaluation Work Plan

Hunters Point Naval Shipyard

San Francisco, California

August 2022

Approved for public release; distribution is unlimited.

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August 2022

DCN: GLBN-0005-5305-0050

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Executive Summary

Background

Radiological surveys and remediation were previously conducted at former Hunters Point Naval Shipyard (HPNS) as part of a basewide Time-Critical Removal Action (TCRA). Tetra Tech EC, Inc. (TtEC), under contracts with the Department of the Navy (Navy), conducted a large portion of the basewide TCRA, including Parcel C. Data manipulation and falsification were committed by TtEC employees during the TCRA. An independent third-party evaluation of previous data identified additional potential manipulation, falsification, and data quality issues with data collected at Parcel C (see *Radiological Data Evaluation Findings Report for Parcel C Soil, Former Hunters Point Naval Shipyard, San Francisco, California* [Navy, 2017]; and *Building Radiation Survey Data Initial Evaluation Report, Former Hunters Point Naval Shipyard, San Francisco, California* [Navy, 2018]). As a result, the Navy developed this work plan to investigate radiological sites in Parcel C.

Project Purpose

The purpose of the investigation presented in this work plan is to determine whether current site conditions are compliant with the remedial action objective (RAO) in the *Record of Decision for Parcel C, Hunters Point Shipyard, San Francisco, California* (Parcel C ROD; Navy, 2010). The RAO for radiologically impacted soil and structures is to prevent receptor exposure to radionuclides of concern (ROCs) at concentrations that exceed remediation goals (RGs) for all potentially complete exposure pathways.

Scope

The radiological investigation will be conducted at the following sites within Parcel C:

- Former Sanitary Sewer and Storm Drain Trenches
- North Pier and Ship Berths
- Building 203
- Building 205
- Building 211
- Building 214
- Building 224
- Building 241
- Building 253
- Building 271

- Building 272

The sites and the locations of work are shown on **Table ES-1** and **Figure ES-1**.

Soil Investigations

Soil investigations will be conducted at the following areas:

- Former Sanitary Sewer and Storm Drain Trenches
- North Pier and Ship Berths

Soil investigation areas will be divided into trench units (TUs) and surface soil survey units (SUs). The sizes and boundaries of the TUs and surface soil SUs will be based on the previous plans and reports.

Former Sanitary Sewer and Storm Drain Trench Units

For the TUs associated with former sanitary sewers and storm drains, a phased investigation approach was designed based on a proposal by the regulatory agencies to achieve a high level of confidence that the Parcel C ROD RAO has been met for soil. For Phase 1, 100 percent of soil will be re-excavated and characterized at 33 percent of TUs in Parcel C. Soil sampling at the remaining 67 percent of TUs will be performed as part of Phase 2 to increase confidence that current site conditions comply with the Parcel C ROD RAO. The Navy will re-excavate 100 percent of Phase 2 TUs if contamination is identified in Phase 1 TUs. For both Phase 1 TUs and Phase 2 TUs, the durable cover (including asphalt, asphalt base course, concrete, gravel, debris, or obstacles) will be removed to expose the target soils.

Phase 1

Phase 1 includes the radiological investigation on a targeted group of TUs. Twenty-three of the 69 former sanitary sewer and storm drain TUs were selected for the Phase 1 investigation.

The radiological investigation of soil includes:

- Collection of systematic soil samples from each TU
- Gamma scan survey of 100 percent of the soil
- Collection of biased soil samples, where necessary, based on the gamma scan measurements

The targeted TUs were selected based on the highest potential for radiological contamination. The following information was used to select the units:

- Historical documentation of specific potential upstream sources, spills, or other indicators of potential contamination (see *Historical Radiological Assessment,*

Hunters Point Annex, Volume II, History of the Uses of General Radioactive Material 1939–2003 [HRA; Naval Sea Systems Command (NAVSEA), 2004])

- Signs of potential manipulation or falsification from the soil data evaluation (Navy, 2017, 2018)

All of the soil (100 percent) will be excavated to the original TU boundaries, as practicable, and gamma scan surveys of the excavated material will be conducted. Excavated soil will be gamma scanned by laying it out on Radiological Screening Yard (RSY) pads for a surface scan. Following excavation to the original TU boundaries, additional excavation of approximately 6 inches of the trench sidewalls and floors will be performed to provide ex situ gamma scanning and sampling of the trench sidewalls and floors. The excavated soil from within each trench and the over-excavation will be tracked separately, and global positioning system (GPS) location-correlated results will be collected.

Systematic and biased samples will be collected from the excavated soil from the TUs and from the soil surrounding the TUs. A minimum of 25 systematic samples will be collected from each excavated soil unit and TU until an agreement based on the data variability observed in the soil is reached between the Navy and regulatory agencies. The soil samples will be analyzed for the applicable ROCs by accredited off-site laboratories. Soil sample locations will be surveyed using GPS. If the investigation results from the gamma scan surveys and results from analysis of systematic and biased soil samples of the over-excavated material demonstrate exceedances of the RGs that are not attributed to naturally occurring radioactive material (NORM) or anthropogenic background, the material will be segregated for further evaluation. As directed by the Navy, an in situ investigation and/or remediation of the trench sidewalls and floor will be performed prior to backfill.

Phase 2

At the remaining 46 TUs, a gamma scan survey of 100 percent of accessible surface areas and soil sampling will be conducted. Subsurface soil samples will be collected via borings, with a minimum of 18 borings within the trench and one boring every 50 linear feet along the sidewalls of the trench. The borings will be advanced beyond the floor boundary of the trench or to the point of refusal. Gamma scans of the core will be conducted. Borehole locations will be surveyed using GPS. The soil samples will be analyzed for the applicable ROC analysis by accredited off-site laboratories.

North Pier and Ship Berth Soil Survey Units

At the 20 SUs from the North Pier and Ship Berths, the radiological investigation of surface soil is based on a proposal by the regulatory agencies and includes the following.

Phase 1

Phase 1 includes the radiological investigation of a targeted group of SUs. Ten of the 20 North Pier and Ship Berth surface soil SUs were selected for the Phase 1 investigation which includes:

- Collection of a minimum of 25 systematic soil samples from each SU
- Gamma scan survey of 100 percent of the soil
- Collection of biased soil samples, where necessary, based on the gamma scan measurements

For all the surface soil SUs, gamma scan surveys of 100 percent of the surface soil will be conducted. GPS location-correlated results will be collected. Systematic and biased samples will be collected from the surface soil SUs. The soil samples will be analyzed for the applicable ROCs by accredited off-site laboratories. Soil sample locations will be surveyed using GPS.

Phase 2

Phase 2 includes the radiological investigation on the remaining 10 of the 20 North Pier and Ship Berth surface soil SUs, including the collection of a minimum of 18 systematic soil samples from each SU. The soil samples will be analyzed for the applicable ROCs by accredited off-site laboratories. Soil sample locations will be surveyed using GPS.

Building Investigations

Investigations of interior surfaces will be performed for the following buildings:

- Building 203
- Building 205
- Building 211
- Building 214
- Building 224
- Building 241
- Building 253
- Building 271
- Building 272

Buildings will be divided into SUs, and the sizes and boundaries of the SUs will be based on the previous plans and reports. The radiological investigation will be conducted to include:

- Collection of a minimum of 18 systematic static alpha-beta measurements from each SU
- Alpha and beta scan of surfaces
- Collection of biased static alpha-beta measurements where necessary, based on the alpha-beta scan measurements
- Collection of swipe samples

For Building 205, data will be collected consistent with the *Technical Memorandum to Support No Further Action for Building 205, including the Suction Channels and Discharge Piping, Hunters Point Naval Shipyard, San Francisco, California* (TtEC, 2017a) to confirm the conclusion of no further action.

Building 241 includes four SUs consisting of exposed soil that will be investigated the same as Phase 1 surface soil SUs.

Data Evaluation and Reporting

Data from the radiological investigation will be evaluated to determine whether the site conditions are compliant with the Parcel C ROD RAO. If the residual ROC concentrations are below the RGs in the Parcel C ROD (Navy, 2010) or are shown to be NORM or anthropogenic background, then the site conditions are compliant with the Parcel C ROD RAO. **Section 5** of this work plan provides additional information and details on data evaluation and reporting.

The following methods will be used to determine whether the residual ROC concentrations comply with the Parcel C ROD RAO:

- Each sample and static measurement result will be compared to the corresponding RG. If all residual ROC concentrations are less than or equal to the corresponding RG, then site conditions comply with the Parcel C ROD RAO.
- Sample and measurement data will be compared to appropriate RBA data, and multiple lines of evidence will be evaluated to determine whether site conditions are consistent with NORM or anthropogenic background. The data evaluation may include, but is not limited to, population-to-population comparisons, use of a maximum likelihood estimate (MLE) or background threshold value, graphical comparisons, and comparison with regional background levels. If all residual ROC concentrations are determined to be consistent with NORM or anthropogenic background, then site conditions comply with the Parcel C ROD RAO.
- Each radium-226 (^{226}Ra) sample result exceeding both the corresponding RG and the expected range of background will be compared to concentrations of other radionuclides in the uranium natural decay series (see **Section 5.6**). If the concentrations of radionuclides in the uranium natural decay series are consistent with the assumption of secular equilibrium, then the ^{226}Ra concentration is NORM, and site conditions comply with the Parcel C ROD RAO.

If the investigation results demonstrate that there are no exceedances determined from a point-by-point comparison with the RGs at agreed upon statistical confidence levels, or that residual ROC concentrations are NORM or anthropogenic background, then a remedial action completion report (RACR) will be developed.

If the investigation results demonstrate exceedances of the RGs determined from a point-by-point comparison with the RGs at the agreed upon statistical confidence levels and are not shown to be NORM or anthropogenic background, then remediation will be conducted, followed by preparation of a RACR.

The RACR will describe the results of the investigation, explain any remediation performed, compare the distribution of data from the sites with applicable reference area data, and provide a demonstration that site conditions are compliant with the Parcel C ROD RAO through the use of multiple lines of evidence including application of statistical testing with agreed upon statistical confidence levels on the background data.

Table ES-1 Soil Trench Units and Building Survey Units

Soil Investigations - Trench Units (TUs)/Survey Units (SUs)			
Site	**Phase 1**	**Phase 2**	
Former Sanitary Sewer and Storm Drain Trenches	TUs 194-198, 203, 205, 210, 213, 237-238, 242-243, 304, 312-314, 315, 326, 330, 333-334, 336	TUs 191-193, 199-200, 202, 206-209, 211-212, 219-221, 226-227, 231-234, 236, 239, 244, 247, 302-303, 316-325, 327-329, 331-332, 335, 337-339	
North Pier	SUs 3-8, 10-11	SUs 1,2, 9	
Ship Berths	SUs 4, 9	SUs 1-3, 5-8	
Building 241	SU 8-11		
Building Investigations - SUs			
Site	**Class 1**	**Class 2**	**Class 3**
North Pier	SUs 12-13		
Ship Berths	SUs 10-13		
Building 203	SUs 01-08	SU 09	SU 10
Building 205	Data to be collected consistent with the *Technical Memorandum to Support No Further Action for Building 205, including the Suction Channels and Discharge Piping* (TtEC, 2017a)		
Building 211	SUs 101-154, 156	SU 157	SU 155
Building 214	SU 1	SU 2	
Building 224	SUs 1, 3	SU 2	
Building 241	SUs 01-07, 01-14	SU 15	
Building 253	SUs 001-151, SUs 155-157, SUs M01-M07, SUs 201-227, SUs 301-343, SUs 401-427, SUs 501-524, SUs 601-614, SU-617	SU 158-159, SU M08, SU-229, SUs 345-346, SU 428, SU 526, SU 618	SUs 152-154, SU 228, SU 344, SU 429, SU 525, SU 615, SU 616
Building 271	SUs 01-11	SU 12	
Building 272	SU 01-21	SU 22	